Docket No.: 94-36-3-US-D1

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Werenicz et al. Art Unit: 1733
Serial No.: 09/057,406 Examiner: Aftergut
Filed: April 8, 1998
Title: METHOD FOR PRODUCING A CONTINUOUS THERMOPLASTIC COATING

Assistant Commissioner for Patents
Washington, D.C. 20231
BOX AF

REPLY BRIEF

Applicant submits the following Reply Brief in response to the Examiner's Answer dated December 10, 2002.

Remarks

As a preliminary matter, Applicants hereby withdraw claims 11, 12, 33-36, 38-41, 44, 46, 48, and 56 from Appeal.

Applicants have discovered that if a thermoplastic composition exhibits a particular rheological profile at a given temperature, the thermoplastic composition can form a continuous film when dispensed from a coating device at that temperature without contact between the coating device and a substrate. The particular rheological profile is a complex viscosity of less than about 500 poise at about 1000 radians/seconds at the coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at the coating temperature. This discovery is important in that, because the coating device and the substrate do not contact each other during the coating method, the mechanical stresses on the substrate are much less than with prior art methods (Applicants' Specification, page 3, lines 15). The separation of the coating device and the substrate is particularly advantageous for coating thermally sensitive substrates (Id., page 3, lines 15). Applicants' discovery is further beneficial in that it

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allows the coating of thermoplastic compositions that were typically unsuitable for traditional extrusion die coating methods (Id., page 5, lines 17-20).

The rejections of record are based on assumption, obvious to try and inherency. The Examiner's assumptions are not prior art and cannot be accorded any weight. In re Rijckaert, 9 F.3d 1531, 1534 (Fed. Cir. 1993). Obvious to try is not the standard for determining obviousness. See, Hybritech, Inc. v. Monoclonal Antibodies, Inc., 802 F.2d 1367, 1380 (Fed. Cir. 1986). Inherency is not an appropriate basis for an obviousness rejection. See, In re Rijckaert. It would be error for the board to uphold the rejections of record. See, Hybritech, Inc. v. Monoclonal Antibodies, Inc.; In re Rijckaert, 9 F.3d 1531, 1534 (Fed. Cir. 1993).

The Examiner would have the Board believe that all hot melt coating methods can be used to coat all thermoplastic compositions and that all thermoplastic compositions can be coated as a continuous film using a noncontact coating method. This is simply not the case and is refuted by a close review of the Examples in Applicants' Specification.

Examples 6, 9 and 10 of Applicants' Specification demonstrate that EASTMAN AQ 1350, which is a water dispersible copolyester polymer, did not form a continuous film unless it met the criteria of claim 10. A portion of Table 1 from Applicants' Specification is reproduced below (a copy of the complete Table 1 is attached at Tab 1).

Example	Temp (°C)	Complex Viscosity 1 rad/sec (poise)	Complex Viscosity 10^3 rad/sec (poise)	Continuous coating formed Yes/No
6	120	4500	1500	No
9	140	1000	500	No
10	160	200	200	Yes

CLAIM 10 REQUIRES TEMP LESS THAN 160°C

claim 10 requires less than 160°C

Example 6 demonstrates that the EASTMAN AQ 1350 polymer, when heated to 120°C, had a complex viscosity of 1500 poise at 1000 radians/second and 4500 poise at 1 radian/sec and did not form a continuous film. Example 9 demonstrates that when the EASTMAN AQ 1350 polymer was heated to a temperature of 140°C it had a complex

viscosity of 500 poise at 1000 radians/second and 1000 poise at 1 radian/sec and did not form a continuous film. However, Example 10 demonstrates that when the EASTMAN AQ 1350 polymer was heated to 160°C it had a complex viscosity of 200 poise at 1000 radians/second and 200 poise at 1 radian/sec and did form a continuous film. Nothing in the combinations of cited references proposed by the Examiner teaches or suggests this phenomenon. Moreover, Examples 6, 9 and 10 demonstrate that it is simply not the case that all thermoplastic polymers or formulated thermoplastic compositions can be coated as a continuous film using all known coating techniques.

The Examiner would also have the Board believe that a method that employs a surface nozzle inherently is a noncontact coating method. The record demonstrates that direct coating with a slot nozzle has been around for many years. As Applicants explain in their Specification, conventional slot nozzle coating on uneven substrates such as nonwovens is typically done by keeping the slot nozzle in permanent contact with the substrate such that the nozzle lies on the substrate during the coating (Id., page 2, line 32–page 3, line 2). Thus, it is not the case that coating with a surface nozzle necessarily means that the coating method is one in which there is no contact between the surface nozzle and the substrate.

I. The Examiner has failed to establish that claims 2-10, 42, and 47, 49-54 are unpatentable under 35 U.S.C. § 103 over EP 315,013 in view of Maletsky et al. further in view of Smith et al. and further in view of Buell.

The test of whether it would have been obvious to select specific teachings and combine them to arrive at a claimed invention must be met by identification of some suggestion, teaching, or motivation in the prior art, arising from what the prior art would have taught a person of ordinary skill in the field of the invention. In re Dance, 160 F.3d 1339 (Fed. Cir. 1998) citing In re Fine, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988). See also M.P.E.P. 2142; Fromson v. Anitec Printing Plates, Inc., 132 F.3d 1437 (Fed. Cir. 1997); C.R. Bard, Inc. v. M3 Sys., Inc., 157 F.3d 1340, 1352, (Fed. Cir. 1998). The suggestion or motivation to make the claimed combination must be

found in the prior art and must not be based on Applicants' disclosure. See M.P.E.P. 2142.

The Examiner's Answer employs a number of assumptions to arrive at the method of claim 10. The Examiner's assumptions are not prior art and can be afforded no weight. Claim 10 is directed to a method. The method includes dispensing a continuous film of thermoplastic composition from a coating device at a coating temperature where the thermoplastic composition has a complex viscosity of less than about 500 poise at about 1000 radians/seconds at the coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at the coating temperature, and suspending the film between the coating device and a substrate, where the thermoplastic composition is released from the coating device at a temperature of less than about 160°C.

It is indisputable that EP 315,013 fails to teach or suggest anything about the coating temperature or rheological profile necessary for a thermoplastic composition to form a continuous film using a noncontact coating method.

It is undisputed that Maletsky et al. fail to teach or suggest a noncontact coating method. Maletsky et al. also fail to teach or suggest selecting a coating temperature such that it is less than about 160°C and such that the thermoplastic composition being coated has a complex viscosity of less than about 500 poise at about 1000 radians/seconds at that coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at that coating temperature. Instead, Maletsky et al. broadly disclose a coating procedure in which the coating temperature falls within the range of from about 300°F (149°C) to about 500°F (260°C), and then further explain, "for superior results it is recommended that the coating temperature for a viscosity in the range of from 5000 to 11,000 cps be between 325°F (162.8°C) and about 350°F (173.7°C)." Thus, Maletsky et al. direct the skilled artisan away from selecting a coating temperature less than about 160°C and toward a temperature of from greater than 162.8°C to about 173.7°C. Accordingly, the skilled artisan would have no reason to select a coating temperature less than 160°C, and further would have no reason to select a coating temperature that is less than 160°C and that achieves a thermoplastic composition having a complex viscosity of less than about 500 poise at about 1000 radians/seconds at

that coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at that coating temperature.

Smith et al. is the only reference that discloses a noncontact coating method. Smith et al. do not teach or suggest that all thermoplastic compositions can be coated using a noncontact coating method or that all noncontact coating methods can be used to coat all thermoplastic compositions. Smith et al. also do not teach or suggest anything about the rheological profile that is necessary for a thermoplastic composition to be coated as a continuous film using a noncontact coating method. In particular, Smith et al. do not teach or suggest selecting a coating temperature such that the thermoplastic composition has a complex viscosity of less than about 500 poise at about 1000 radians/seconds at that coating temperature and from about 100 poise to about 1,000 poise at about 1 radian/second at that coating temperature. Smith et al. also do not teach or suggest selecting a coating temperature that is less than about 160°C and that will cause the thermoplastic composition to exhibit a complex viscosity of less than about 500 poise at about 1000 radians/seconds at that coating temperature and from about 100 poise to about 1,000 poise at about 1 radian/second at that coating temperature.

The Examiner also cites Buell. Buell is irrelevant. Buell is directed to a discontinuous coating method and has no bearing on Applicant's claimed invention. For the Examiner to assert otherwise is disingenuous. The Examiner's rationale for citing Buell is as follows:

> One viewing Buell would have understood that in order to process according to EP '013 to attain a continuous film which [sic] was lacking in holes therein the extruder must have been spaced from the surface of the nonwoven substrate (because if it were in contact with the substrate then the adhesive would have been provided in a discontinuous form as evidenced by Buell) (Examiner's Answer, page 9, lines 18-22).

This position is untenable. Ignoring for the moment the fact that the Examiner relies upon his assumptions as to what the skilled artisan would glean from Buell to fill in the pieces that are so clearly missing from Buell in order to arrive at the invention of claim

10, we direct the Board's attention to the actual disclosure of EP 315,013, which expressly contradicts the Examiner's assumptions and therefore the basis of his rejection. EP 315,013 discloses:

> Figure 3 shows a modification of the device according to Fig 2, wherein the surface nozzle 44 is substituted by an application roll 50. Experiments have shown that [by] using such an application roll, extremely low area densities of up to 15 g/m^2 can be achieved without tearing of the desired intact hot melt film on the non-woven 40, thus jeopardizing its perfect functioning as a moisture barrier. (EP 315,013, page 9, lines 12-16).

Thus, EP 315,013 expressly discloses that an application roller can apply an intact hot melt film capable of functioning as a moisture barrier. An application roller cannot apply a hot melt unless it is in contact with a substrate. Therefore, the application roller of EP 315,013 is in contact with the web when it applies an intact film that is capable of functioning as a moisture barrier. Accordingly, EP 315,013 discloses that contact coating methods do produce intact films. Therefore, it is not the case that in order for a coating method to produce a continuous film the coating device must be spaced from the surface of the substrate, as is alleged by the Examiner.

It has not been established that there is a teaching, suggestion or motivation in the proposed combination of EP 315,013, Maletsky et al., Smith et al. and Buell for modifying the references in the manner proposed in the Examiner's Answer to arrive at the invention of claim 10. Because the proposed combination of EP 315,013, Maletsky et al., Smith et al. and Buell does not teach or suggest the invention of claim 10, the proposed combination could not have rendered the invention of claim 10 obvious to the skilled artisan.

II. The Examiner has failed to establish that claim 55 is unpatentable under 35 U.S.C. § 103 over EP 315,013 in view of Maletsky et al. further in view of Smith et al. and optionally further in view of Buell.

Claim 55 is directed to a method of forming a continuous film layer of a hot melt adhesive composition on a nonwoven substrate. The method includes suspending the film such that the film builds in viscosity and cohesive strength such that any fibers of the nonwoven substrate do not penetrate the continuous film. EP 315,013 does not disclose a hot melt adhesive composition[1] or "suspending a continuous film such that the film builds in viscosity and cohesive strength."

The secondary references of Maletsky et al., Smith et al. and Buell do not cure the deficiencies of EP 315,013. It is undisputed that Maletsky et al. and Buell et al fail to teach a noncontact coating method. Therefore, it cannot be disputed that Maletsky et al. and Buell fail to teach or suggest suspending a continuous film such that the film builds in viscosity and cohesive strength. Smith et al. also do not teach or suggest suspending a continuous film such that the film builds in viscosity and cohesive strength.

The Examiner agrees that none of the cited references teaches or suggests suspending a continuous film such that the film builds in viscosity and cohesive strength. Even so, the Examiner maintains the rejection on the basis of assumptions he makes about the skilled artisan and the cited references. Assumptions are not prior art and do not carry any weight. In re Rijckaert. Moreover, if, as it is agreed, the cited references do not expressly disclose suspending a continuous film of hot melt adhesive composition such that the film builds in viscosity and cohesive strength, the Examiner must be relying on inherency to derive this element of the method of claim 10 from the cited references. As has previously been explained, inherency is not an appropriate basis for a rejection

[1] EP 315,013 does not teach a hot melt adhesive composition, contrary to what is asserted in the Examiner's Answer (see, Examiner's Answer, page 5, line 14). The word "adhesive" is nowhere mentioned in EP 315,013. A careful reading of EP 315,013 reveals that EP 315,013 makes the following disclosures, "thermoplastic high-polymer material, namely a hot melt on the basis of polyethylene[,] EVA or ATP" (see, e.g., EP 315,013 page 5, lines 8-9), and "As coating material, hot melts, especially on the basis of polyethylene, EVA or ATP are preferred" (see, e.g., EP 315,013 page 3, line 13). Thus, it cannot be said that EP 315,013 teaches a hot melt adhesive composition.

based on obviousness. See, e.g., In re Rijckaert, 9 F.3d 1531, 1534 (Fed. Cir. 1993). That which may be inherent is not necessarily known; obviousness cannot be predicated on that which is unknown. In re Spormann, 53 C.C.P.A. 1375, 363 F.2d 444, 448, 150 U.S.P.Q. 449, 452 (CCPA 1966). In other words, because that which is alleged to be inherent is not necessarily known to the skilled artisan, it cannot be deemed to be part of the prior art. Therefore, because an alleged inherent teaching is not known, it cannot be combined with other teachings in the prior art to arrive at an obviousness conclusion.

Since the proposed combination of EP 315,013, Maletsky et al., Smith et al. and Buell lacks a required element of claim 55, i.e., suspending a continuous film of hot melt adhesive composition such that the film builds in viscosity and cohesive strength, the rejection of claim 55 under 35 U.S.C. § 103 over EP 315,013 in view of Maletsky et al. and Smith et al. and optionally in view of Buell cannot be upheld. Moreover, since it has not been established that the invention of claim 55 would have been obvious to the skilled artisan, claim 55 is entitled to receive an indication of allowability.

III. The Examiner has failed to established that claims 3-6, 8, 10, 42, and 47 are unpatentable under 35 U.S.C. § 103 over Sanftleben et al. in view of Boger et al.

It is undisputed that Sanftleben et al. fail to teach or suggest a dispensing a continuous film from a coating device without contact between the coating device and a substrate. Sanftleben et al. also do not teach or suggest selecting a coating temperature such that it is less than about 160°C and such that the thermoplastic composition being coated has a complex viscosity of less than about 500 poise at about 1000 radians/seconds at that coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at that coating temperature. Instead, Sanftleben et al. broadly disclose that their coating materials must liquefy and reach a viscosity of less than about 10 poise at a dispensing temperature in the range of from about 40°C to about 250°C. Sanftleben et al. further disclose that a viscosity of less than 2.5 poise at the desired dispensing temperature is preferable (column 8, lines 54-56).

Boger et al. do not cure the deficiencies of Sanftleben et al. Boger et al. broadly disclose a variety of coating methods. However, Boger et al. do not teach or suggest anything about the rheological profile that is necessary for a thermoplastic composition to be coated as a continuous film using the various coating methods disclosed, let alone the rheological profile that is necessary for a thermoplastic composition to be coated using a noncontact coating method. Boger et al. also fail to teach or suggest selecting a coating temperature such that it is less than about 160°C and such that the thermoplastic composition being coated has a complex viscosity of less than about 500 poise at about 1000 radians/seconds at that coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at that coating temperature. Accordingly, the skilled artisan, upon reading Boger et al. would have no reason to select a coating temperature of less than about 160°C, particularly when Sanftleben et al. disclose that the coating temperature could be anywhere in the range of from about 40°C to about 250°C, and further would have no reason to select a coating temperature that is less than about 160°C and that would cause the thermoplastic composition to exhibit a complex viscosity of less than about 500 poise at about 1000 radians/seconds at that coating temperature and a complex viscosity ranging from about 100 poise to about 1,000 poise at about 1 radian/second at that coating temperature, when Sanftleben et al. disclose that the preferred viscosity is less than 2.5 poise at the dispensing temperature. The proposed combination of Boger et al. thus fails to render obvious claim 10. Accordingly, it has not been established that the proposed combination of Sanftleben et al. and Boger et al. renders obvious claim 10. Therefore, the rejection of claims 3-6, 8, 10, 42, and 47 under 35 U.S.C. § 103 over Sanftleben et al. in view of Boger et al. cannot be upheld.

CONCLUSION

The Examiner has not established a prima facie case of obviousness for the claims 2-10, 42, and 47, 49-54 and 55. Accordingly, the claims 2-10, 42, and 47, 49-54 and 55 are entitled to receive an indication of allowability and such action is respectfully requested.

Please charge any fees or credit any over payments to Deposit Account No. 06-2241.

Respectfully submitted,

Date: February 10, 2003

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Table 1

Example	Temp. (°C)	Complex Viscosity 1 rad/sec (poise)	Complex Viscosity 10^3 rad/sec (poise)	G' 1 rad/sec (dynes/cm^2)	Crossover Frequency (rad/sec)	Tan delta @ 1 rad/sec	Slope = Visc @ 1/1000 rad/sec	Continuous Coating Formed yes/no
4	125	15000	100	10000	1	1	150	no
5	90	10000	300	3000	300	3	33	no
6	120	4500	1500	300	1000	30	4.5	no
7	90	3000	100	400	50	7	30	not tested
8	110	2000	500	700	10000	3	4	no
9	140	1000	500	50	>1000	70	2	no
10	160	200	200	5	>1000	4	1.25	yes
11	125	800	100	5000	20	1	8	yes
12	125	800	100	100	1000	10	8	yes
13	125	300	50	200	1	1	6	not tested
14	110	300	50	20	7000	20	6	yes
15	128	100	80	10	1000	10	1.25	yes
16 & 24-26	110	100	3.5	8	100	25	28	no
18	130	350	90	40	>1000	10	4	yes
19	110	800	130	130	1000	8	6	yes
20	140	120	60	1	>1000	50	2	yes
21	110	500	200	20	1000	20	2.5	yes
22 & 23	130	250	120	10	>1000	30	2	yes
27 & 28	120	120	60	1	1100	100	2	yes